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SHORT REPORT

Mycotic Aneurysm Affecting the Superficial Femoral Artery Caused by *Clostridium septicum*. Case Report and Review of the Literature

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Clostridium septicum is responsible for 5–20% of all clostridial infections.A high incidence of malignancy has been described among these kind of septicaemias. We report the 17th case of mycotic aneurysm caused by *Clostridium septicum* and the first affecting the superficial femoral artery. We analyse similarities among the 17 cases.

Key Words: Mycotic aneurysm; Clostridial sepsis; Clostridium septicum.

Introduction

Clostridium septicum is an anaerobic, Gram-positive rod, responsible for 5–20% of all clostridial infections[1] and frequently associated with neoplastic processes.[2] Infectious aneurysms caused by *Clostridium septicum* are extremely rare. To our knowledge, only 16 previous cases of clostridial mycotic aneurysms have been published. We report the first case of *Clostridium septicum* mycotic aneurysm of the superficial femoral artery. At the same time we analyse differences and similarities among the 17 cases.

Case Report

A 90-year-old female with no vascular risk factors came to our emergency department with left thigh pain, signs of acute arterial ischaemia and fever (38 °C). Physical examination revealed a pulsatile mass in the inner side of the middle third of the left thigh and absence of popliteal and distal pulses. Haematocrit was 34% and leucocyte count 20 990/mm. A duplex ultrasound scan showed a 6 cm saccular aneurysm of the superficial femoral artery. Computed tomography confirmed the US findings and showed signs of rupture of the aneurysm (Fig. 1). Angiography was performed revealing the presence of a saccular aneurysm of the distal portion of the superficial femoral artery and segmental occlusion of the popliteal artery with only one patent distal vessel (Fig. 2).

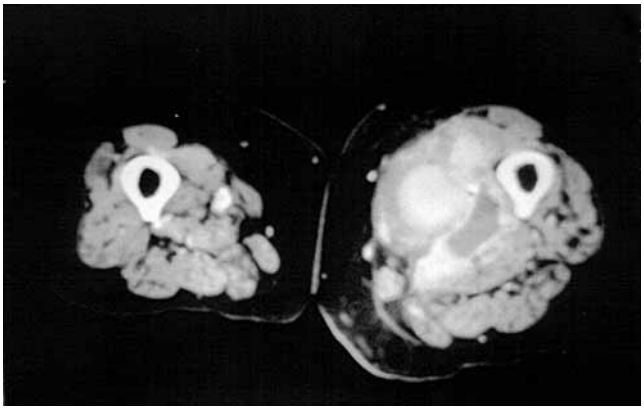

Fig. 1. CT scan showing a ruptured superficial femoral artery aneurysm.

The patient was transferred urgently to the operating room. A huge ruptured aneurysm of the superficial femoral artery was found. The walls of the aneurysm were friable with necrotic debris. Gram-positive rods

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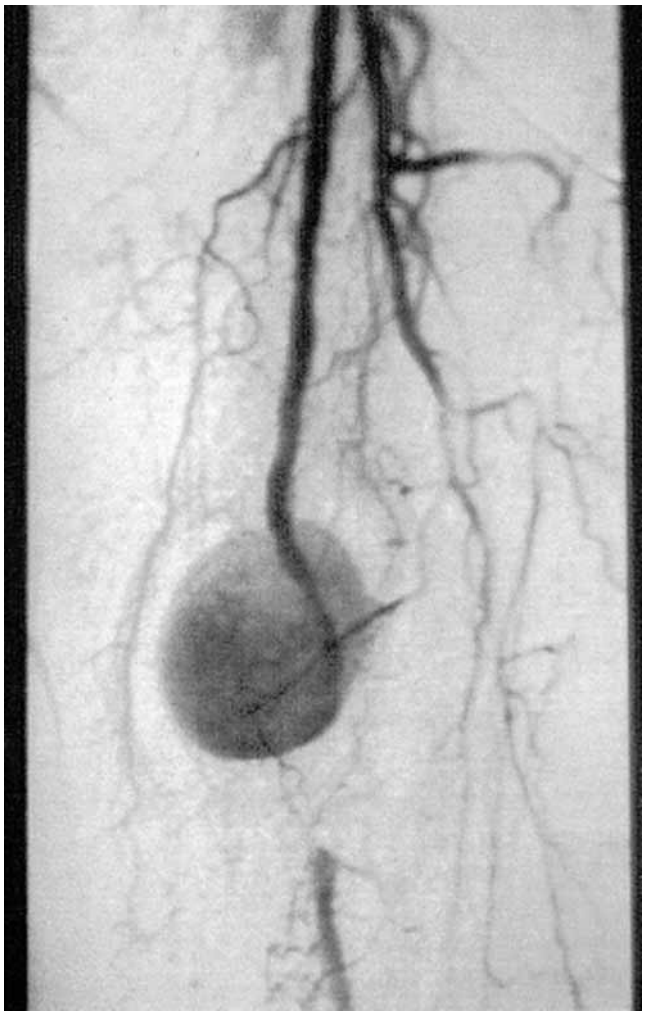

Fig. 2. Angiography of the left lower extremity revealing a saccular aneurysm of the distal portion of the superficial femoral artery.

were identified from the aneurysm wall. We proceed to arterial ligature and wide resection of the aneurysm and infected surrounding tissues. A contralateral reversed long saphenous vein femoropopliteal bypass was done, leaving both anastomoses outside the infected area. The patient was treated with vancomycin for the first 72 h, followed by penicillin G once positive cultures for *Clostridium septicum* were returned. Penicillin therapy was maintained for a 6 week period. The postoperative course was unremarkable except for a small wound dehiscence.

Once the patient had recovered, a transthoracic echocardiogram was performed revealing no evidence of endocarditis. Abdominal computed tomography and colonoscopy demonstrated a tumour in the caecum. A biopsy revealed adenocarcinoma so a right hemicolectomy was carried out without complication. Ten months later the patient died from a probable heart attack.

Discussion

Although many species of Clostridium may cause infections of the vascular tree, *Clostridium septicum* is the second in frequency of all Clostridium species affecting humans[3] after *Clostridium perfringens* and the main one associated with severe septicaemia.[4] A series of eight patients[1] with septicaemia due to *Clostridium septicum* showed a mortality rate of 62.5% (five cases).

To date, there are only 16 cases of infectious aneurysms caused by *Clostridium septicum* reported in the literature: 12 affecting the aorta,[5–16] one in the common iliac artery,[17] one in the popliteal artery[18] and two in the iliofemoral vessels.[19,20] One of these describes an infected atherosclerotic aneurysm[19] and the other an infected femoral artery pseudoaneurysm.[20] There is evidently a predilection for infection of the aorta. The present case is the 17th case and the first one affecting the superficial femoral artery.

Analysing all the cases, there are 10 (59%) males and seven (41%) females with mean age of 75 years (range: 60–90). Diabetes was present in four cases (23.5%). Mortality rate reaches 59% (10/17). Neoplasm was revealed in 12 patients (70%), 11 of them in the digestive track (64%; nine malignant) and one of haematologic origin (6%). In eight of the nine patients that presented with digestive malignancy, the cancer was located proximal to the splenic angle of the colon. A high incidence of malignancy among patients with septicaemia due to the *Clostridium septicum* has already been referred to in the literature.[1,2] Even though the association with malignancy relates to clostridial infections in general, *Clostridium septicum* showed the highest incidence. Bretzke *et al.*[21] reported a 10% incidence of malignancy in a 24 patient series with clostridial infection; the incidence increased to 52.6% for *Clostridium septicum* cases.

Analysing these 17 cases we reach the conclusion that a colonoscopy is obligatory in patients presenting with aneurysms infected with *Clostridium septicum*. Because of the high mortality amongst these patients, generally due to septic or haemorrhagic complications, surgical repair is mandatory. Also we think that it is essential to maintain antibiotic therapy for a long period (at least 6 weeks) postoperatively. Penicillin is the first antibiotic of choice.

References

1 Pelfrey TM, Turk RP, Peoples JB, Elliott DW. Surgical aspects of *Clostridium septicum* septicemia. *Arch Surg* 1984; **119**: 546–550.
2 Tanabe KK, Jones WG, Barie PS. Clostridial sepsis and malignant disease. *Surg Gynecol Obstet* 1989; **169**: 423–428.

3 Pelletier JPR, Plumbley JA, Rouse EA, Cina SJ. The role of *Clostridium septicum* in paraneoplasic sepsis. *Arch Pathol Lab Med* 2000; **124**: 353–356.
4 Caya JG, Farmer SG, Ritch PS *et al. Clostridium septicemia* complicating the course of leukemia. *Cancer* 1986; **57**: 2045–2048.
5 Skipper D, Birch HA, Fallowfield NE, Taylor RS. Clostridial mycotic aneurysm of the suprarenal abdominal aorta. *J Cardiovasc Surg* 1991; **32**: 472–474.
6 Hurley L, Howe K. Mycotic aortic aneurysm infected by *Clostridium septicum* – a case history. *Angiology* 1991; **42**: 585–589.
7 Brahan RB, Kahler RC. *Clostridium septicum* as a cause of pericarditis and mycotic aneurysm. *J Clin Microbiol* 1990; **28**: 2377–2378.
8 Christensen J, Bistrup C. Emphysematous pyelonephritis caused by *Clostridium septicum* and complicated by a mycotic aneurysm. *Br J Radiol* 1993; **66**: 842–843.
9 Bridges RA, McTamancy JP, Barnes RW. Recognition and management of ruptured infected aneurysm of the abdominal aorta. *Vasc Surg* 1981; **15**: 360–366.
10 Moment SL, Overholt EL. Aortitis due to metastatic gas gangrene. *Wis Med J* 1989; **88**: 28–30.
11 Semel L, Aikman WO, Parker FB, Marvasti MA. Nontraumatic clostridial myonecrosis and mycotic aneurysms formation. *NY State J Med* 1984; **84**: 195–196.
12 Sailors DM, Eidt JF, Gagne PJ *et al.* Primary *Clostridium septicum* aortitis: a rare cause of necrotizing suprarenal aortic infection. *J Vasc Surg* 1996; **23**: 714–718.
13 Murphy DP, Glazier DB, Krause TJ. Mycotic aneurysm of the thoracic aorta caused by *Clostridium septicum*. *Ann Thorac Surg* 1996; **62**: 1835–1837.
14 Monsen T, Palmgren H, Arnerlšv C, Billheden J. Aortic dissection due to *Clostridium septicum* infection. *Eur J Vasc Endovasc Surg* 1997; **13**: 517–518.
15 Montoya FJ, Weinstein-Moreno LF, Johnson CC. Photo quiz. Mycotic thoracic aneurysm due to *Clostridium septicum* and occult adenocarcinoma of the cecum. *Clin Infect Dis* 1997; **24**: 785, 1007.
16 Messa CA III, Kulkarni M, Arous E. Double clostridial mycotic aneurysms of the aorta. *Cardiovasc Surg* 1995; **3**: 687–692.
17 Asplund MW, Molinaro A. Infected solitary iliac artery aneurysm. *J Vasc Surg* 1990; **12**: 219–220.
18 Narula A, Lake SP, Baker AR, Greenwood RK. Mycotic aneurysm of the popliteal artery following right hemicolectomy. *Postgrad Med J* 1988; **64**: 638–639.
19 Kaufman JL, Fereshetian A, Chang B, Shah DM, Leathar RP. Septicemia presenting with endoaneurysmal gas: CT demonstration. *Am J Radiol* 1988; **151**: 287–288.
20 Flores A, Gonzalez-Tabares E, Arias R *et al.* Femoral artery pseudoaneurysm infected by *Clostridium septicum*. A case report and review of the literature. *Angiolog'a* 2000; **5**: 183–188.
21 Bretzke ML, Bubrick MP, Hitchcock CR. Diffuse spreading *Clostridium septicum* infection, malignant disease and immune suppression. *Surg Gynecol Obstet* 1988; **166**: 197–199.